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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

COOLMAN, VAUGHN

ART UNIT	PAPER NUMBER
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3618

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/555,278	Applicant(s) LANG ET AL.	
	Examiner VAUGHN T. COOLMAN	Art Unit 3618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 March 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 15-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 15-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>11/2/05, 5/11/07</u> . | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Specification

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 15 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Regarding the term “superimposed”, which is defined by Merriam-Webster Online Dictionary 11th Edition as “to place or lay over or above something”, it is unclear how a drive movement is placed above another drive movement. Examiner is taking this to mean the magnitude of the forces produced by the drive movements are added together. Furthermore, it is unclear how this superimposition “brings about” an infinitely variable transmission ratio. Examiner is taking the claim limitation to mean that the addition or subtraction of drive movement force from the electric drive unit to the output shaft can increase or decrease the transmission ratio from the current ratio.

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Claim 18 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Although mentioned briefly on pages 28 and 29 of the jumbo specification, it is unclear how the drive train, including the output shaft can “switch over” between two different driving ranges (speeds) without acceleration or deceleration of at least one “inert” mass. At the very least, one component of the drive train or vehicle must be accelerated or decelerated in order to switch driving ranges. Please see below for treatment of the claim term “inert” as it pertains to moving objects.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 15-28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 15 recites the limitation "the drive unit" in lines 10-11. There is insufficient antecedent basis for this limitation in the claim.

Claim 18 recites the limitation “acceleration or deceleration of inert masses”. It is unclear how one accelerates or decelerates an inert mass. “Inert” is defined by Merriam-Webster Online Dictionary 11th Edition as “lacking the power to move”, but is silent on whether the term excludes fast moving masses such as rotating parts of a transmission. Cambridge Advanced Learner’s Dictionary defines “inert” strictly as “not moving or not able to move”. Due to the

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conflicting definitions, especially when taken in context of the claim as a whole, the scope of the claim is rendered unclear as to what is actually happening or not happening and to what.

All remaining claims are rejected as depending from a rejected base claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 15-17, 19, and 25 are rejected under 35 U.S.C. 102(a) as being anticipated by Heitmann et al (WO 03/016749 A1). Examiner is using identical, but English language publication U.S. Patent No. 6,966,860 B2 for greater accuracy and all figure numbers and text callouts are from the US document.

[claim 15] Heitmann discloses a drive train comprising:

a gear unit (4) which has at least five transmission stages for a first operating mode, the transmission stages being implemented by way of a plurality of planet sets (5, 6),

a first drive unit (engine connected to 2) which has a drive connection to an output shaft (3) via an input shaft (2) and the gear unit, and

an additional electric drive unit (14), wherein the gear unit has a pick off gear unit (17, 20, 22) which, in the first operating mode, is intermediately connected into a force flow between the input shaft and output shaft, and by which, in a second operating mode, a drive movement of the [first drive] drive unit and a drive movement of the additional electric drive unit are

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superimposed so as to bring about an infinitely variable transmission ratio of a drive movement of the input shaft (column 3, lines 38-42) with respect to an output element (31) of the pick off gear unit, and wherein the gear unit has a second component transmission (6) which, in the first operating mode (brake 11 actuated), is intermediately connected into the force flow between the input shaft and output shaft, and which has at least two driving ranges in which, in the second operating mode, a drive movement of the output element is transferred to the output shaft (column 4, lines 15-20).

[claim 16] Heitmann further discloses a first driving range, wherein output is carried out by the output element (31) of the pick off gear unit, and in a second driving range, the output is carried out by two output elements (26, 27) of the pick off gear unit with respect to the second component transmission (6).

[claim 17] Heitmann further discloses that common shifting elements (clutches and brakes) are used to bring about the drive connection in the first and second operating modes.

[claim 19] Heitmann further discloses a control unit (column 3, lines 22-25) which contains a driving strategy which permits shifting elements and the drive units to be actuated in order to select an operating mode assigned to the drive train.

[claim 25] Heitmann further shows shifting elements (12, 13) which can be used, in one shifted position, to bring about a drive connection of the additional electric drive unit to the input shaft, and in one shifted position, can bring about a drive connection to a transmission element of the pick off gear unit.

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 20-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heitmann.

[claim 20] Examiner notes that although not explicitly disclosed by Heitmann, it is old and well known and would have been obvious to one of ordinary skill in the art at the time the invention was made for the control unit to take into account a charge state of the battery in order to select an operating mode. The charge state is usually monitored such that the state of charge does not fall below a certain level, such that enough electric power is available to drive the vehicle in a motor-only mode.

[claim 21] Examiner notes that although not explicitly disclosed by Heitmann, it is old and well known and would have been obvious to one of ordinary skill in the art at the time the invention was made for the control unit to take into account at least one ambient parameter in

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order to select an operating mode. Ambient parameters such as temperature or oxygen content of the intake air can have a great effect on the performance and operation of various components of the vehicle such as the battery and the engine. Monitoring at least one parameter and adjusting the operating modes of the drive unit based on said at least one parameter can increase the overall efficiency of the vehicle.

[claim 22] Examiner notes that although not explicitly disclosed by Heitmann, it is old and well known and would have been obvious to one of ordinary skill in the art at the time the invention was made for the control unit to take into account a vehicle parameter in order to select an operating mode. A vehicle parameter such as gross vehicle weight or towing state and amount can greatly impact the takeoff, slowdown, and cruising effectiveness of the vehicle and by taking at least one vehicle parameter into account, the control unit can adjust the infinitely variable ratio of the drive unit in order to mitigate any negative effects the vehicle parameters might produce.

[claim 23] Examiner notes that although not explicitly disclosed by Heitmann, it is old and well known and would have been obvious to one of ordinary skill in the art at the time the invention was made for the control unit to take into account a movement variable of the vehicle in order to select an operating mode. Movement variables of the vehicle, such as angle of inclination/declination or positive/negative rates of change in vehicle speed can adversely impact the efficiency of the vehicle and/or provide opportunities to improve the efficiency of the vehicle. Taking at least one movement variable into account when selecting an operating mode can improve the overall efficiency of the vehicle.

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[claim 24] Examiner notes that although not explicitly disclosed by Heitmann, it is old and well known and would have been obvious to one of ordinary skill in the art at the time the invention was made for the control unit to take into account at least one variable which is dependent on a driver in order to select an operating mode. Driver dependent variables such as desired acceleration/deceleration rates again provide opportunity to improve vehicle efficiency and driver feel (is the vehicle responding promptly and appropriately to desired commands).

Claims 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heitmann in view of Bitsche et al (U.S. Patent No. 6,695,082 B2).

[claim 26] Heitmann discloses all of the limitations of the claimed invention as describe above except for a further electric drive unit. Bitsche teaches a vehicle drive unit including an additional electric drive unit (3) and a further electric drive unit (53) which can be used to feed a drive torque directly into an engine shaft or the input shaft. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a further electric drive unit such that it “allows the drive [unit] to be started in a particularly short time while the vehicle is being driven by” the additional electric drive unit as noted by Bitsche (column 6, lines 22-31).

[claim 27] Both Heitmann and Bitsche embody the first drive unit as an internal combustion engine (ICE) and Bitsche teaches starting the ICE solely by the further electric drive unit, while Heitmann discloses that the ICE can be started by the additional electric drive unit. Therefore, the combination can start the ICE by the additional electric drive unit and the further electric drive unit. Examiner is interpreting the second claim limitation to mean that rather than

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only the further electric drive unit being able to start the ICE, each of the additional electric drive unit and the further electric drive unit can start the ICE independently.

[claim 28] Heitmann further discloses a battery connected to the additional electric drive unit (column 3, line 25), wherein energy of at least one of the drive train, the further electric drive unit (Bitsche – column 6, lines 29-31), and the internal combustion engine is fed back into said battery in a generator operating mode of the additional electric drive unit.

Claims Not Rejected over the Prior Art

Claim 18 is neither anticipated by nor obvious over the prior art of record. It is, however, not in condition for allowance in view of the issues under 35 USC §112 first and second paragraphs as discussed above.

As regards claims currently rejected under 35 USC §112, second paragraph, please note that rejections under 35 USC §102 and 103 should not be based upon considerable speculation as to the meaning of the terms employed and assumptions as to the scope of the claims when the claims are not definite. See *In re Steele* 305 F.2d 859, 862, 134 USPQ 292, 295 (CCPA 1962). When no reasonably definite meaning can be ascribed to certain terms in a claim, the subject matter does not become anticipated or obvious, but rather the claim becomes indefinite. See *In re Wilson* 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). As such the currently pending claims may be subject to prior art rejections not set forth herein upon the clarification of the claim language.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Schmidt (U.S. Patent Nos. 5,558,589 A; 5,571,058 A; 5,558,588 A) discloses parallel hybrid transmissions pertinent to the instant application.

Bowen (U.S. Patent No. 6,579,201 B2) discloses multiple motor planetary gear transmissions pertinent to the instant application.

Oshidari (U.S. Patent No. 7,404,460 B2) discloses a multiple planetary gearset transmission having clutches pertinent to the instant application.

Reid (U.S. Patent No. 6,302,820 B1) teaches planetary gear transmissions pertinent to the instant application.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to VAUGHN T. COOLMAN whose telephone number is (571)272-6014. The examiner can normally be reached on Monday thru Friday, 10am-8pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Dickson can be reached on (571) 272-7742. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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